Stereo Radio Recorder AW7520/00

Service
Service
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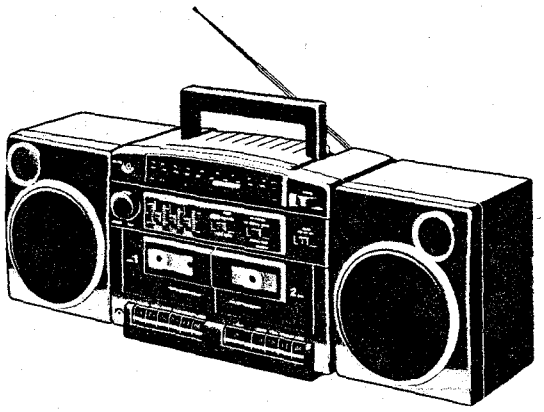

Service Manual

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"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

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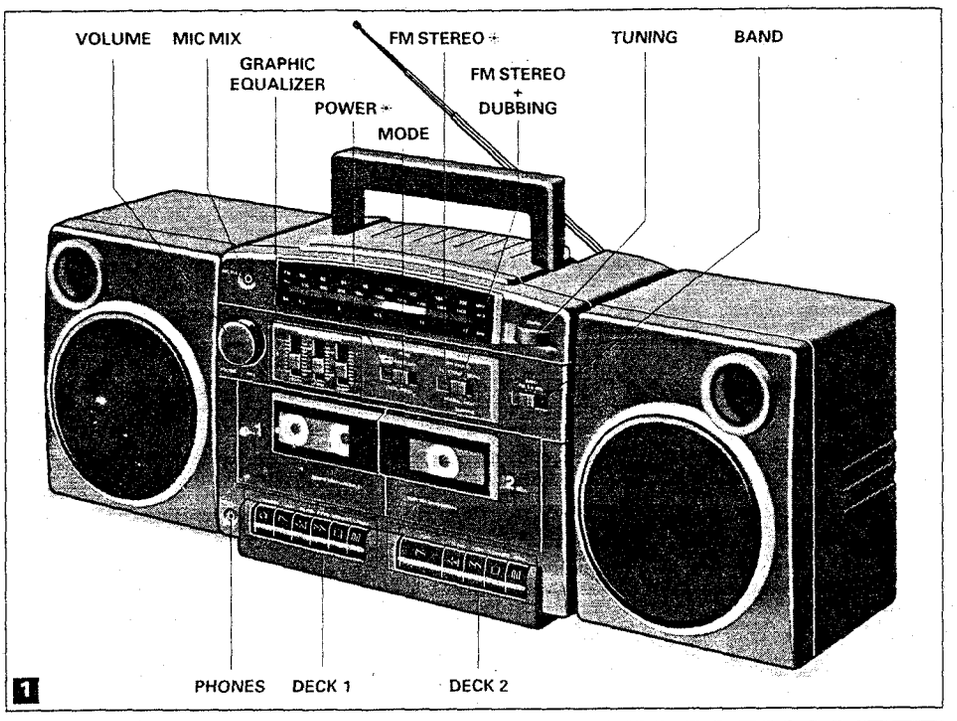
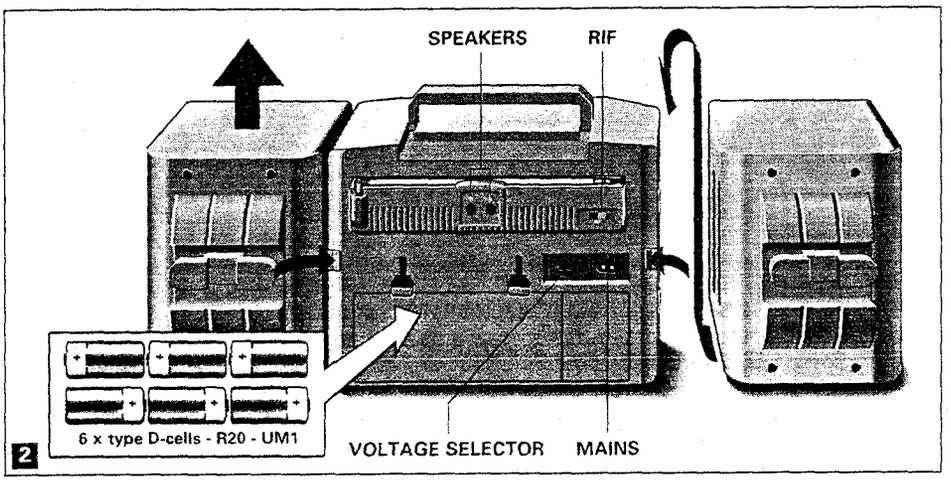
PHILIPS

CONNECTIONS AND CONTROLS





(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

(SF)
Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)
Le norme di sicurezza esigono che l'appareccio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago identici a quelli specificati.

(S)
Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskider gränsen för laserklass 1.

(F)
Les normes de sécurité exigent que l'appareil soit remis à l'etat d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

SPECIFICATIONS

GENERAL

Mains voltage		: 220/230 V
Mains frequency		: 50 Hz
Battery		: 9V (R20 x 6)
Power Consumption		: 20W
Output power	mains	: 2 x 1.8 W
	battery	: 2 x 1.8 W
Speaker impedance		: 2 x 4 ohm

AUDIO/CASSETTE

Tape speed		: 4.76 cm/s ± 3%
Wow & flutter		: < 0.5% WRMS
Fast-wind time (C60)		: < 140 sec.
Frequency response	P/B	: 125 - 8,000 Hz (± 6dB)
High speed dubbing		: 125 - 6,300 Hz
S/N ratio		: > 40 dB
Erase ratio		: 50 dB (w/BPF)
Graphic equalizer	100 Hz	: ± 7 dB
	1 kHz	: ± 7 dB
	10 kHz	: ± 7 dB

TUNER - FM section

Tuning range		: 87.5 - 108 MHz
IF frequency		: 10.7 MHz
Sensitivity		: < 16 μV at 26dB S/N
Selectivity		: > 15 dB at 600kHz B.W.
IF rejection		: > 50 dB
Image rejection		: > 22 dB
AM suppression		: > 30 dB
Stereo seperation	1 kHz	: > 22 dB

TUNER - AM section

Tuning range	MW	: 520 - 1610 kHz
	LW	: 148 - 285 kHz
IF frequency		: 468 ± 5 kHz
Sensitivity	MW	: < 2200 μV/m 26dB S/N
	LW	: < 4000 μV/m 26dB S/N
Selectivity	MW	: > 16 dB
	LW	: > 20 dB
IF rejection	MW	: > 38 dB
Image rejection	MW	: > 35 dB
	LW	: > 30 dB

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

ESD

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

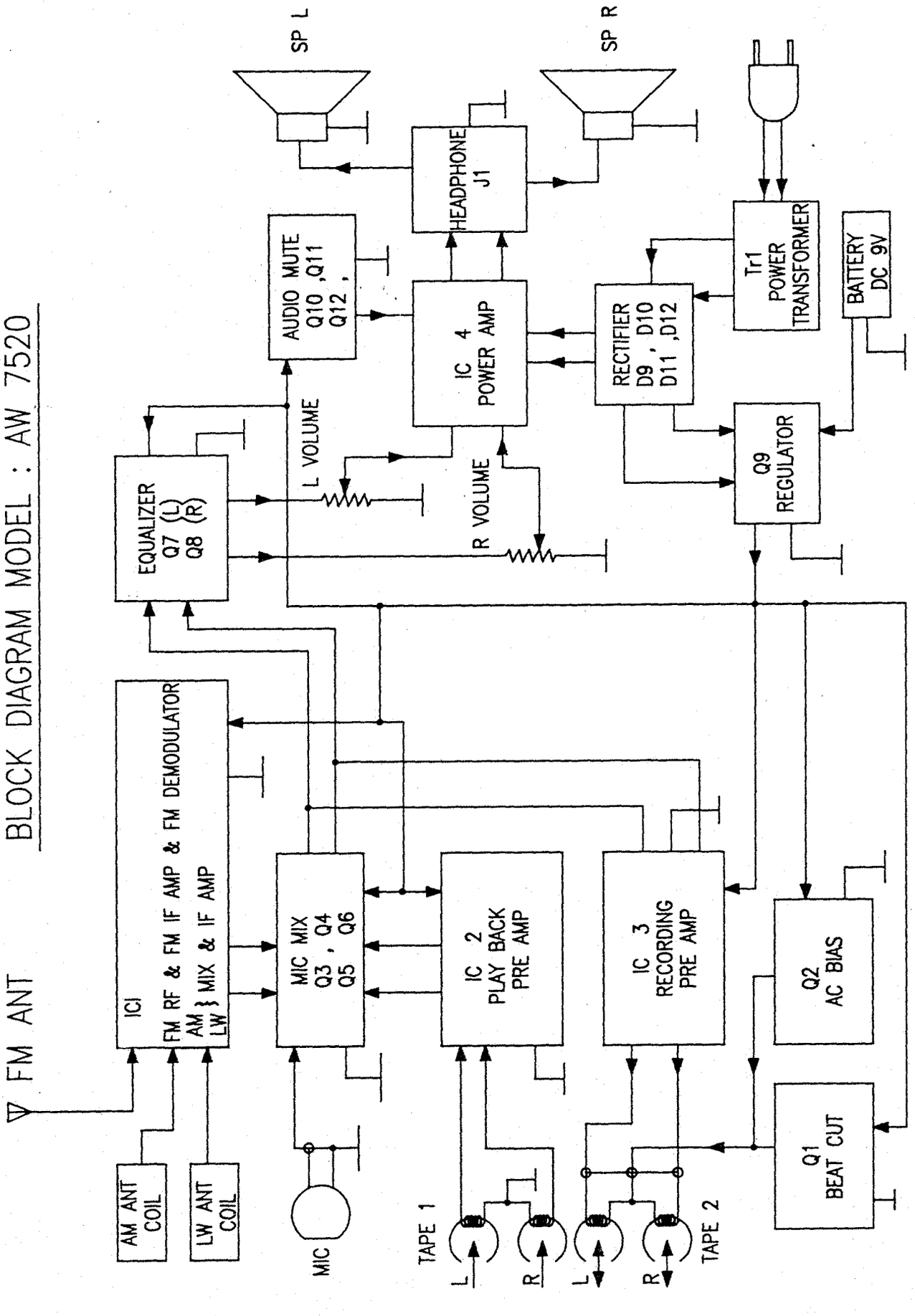
(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

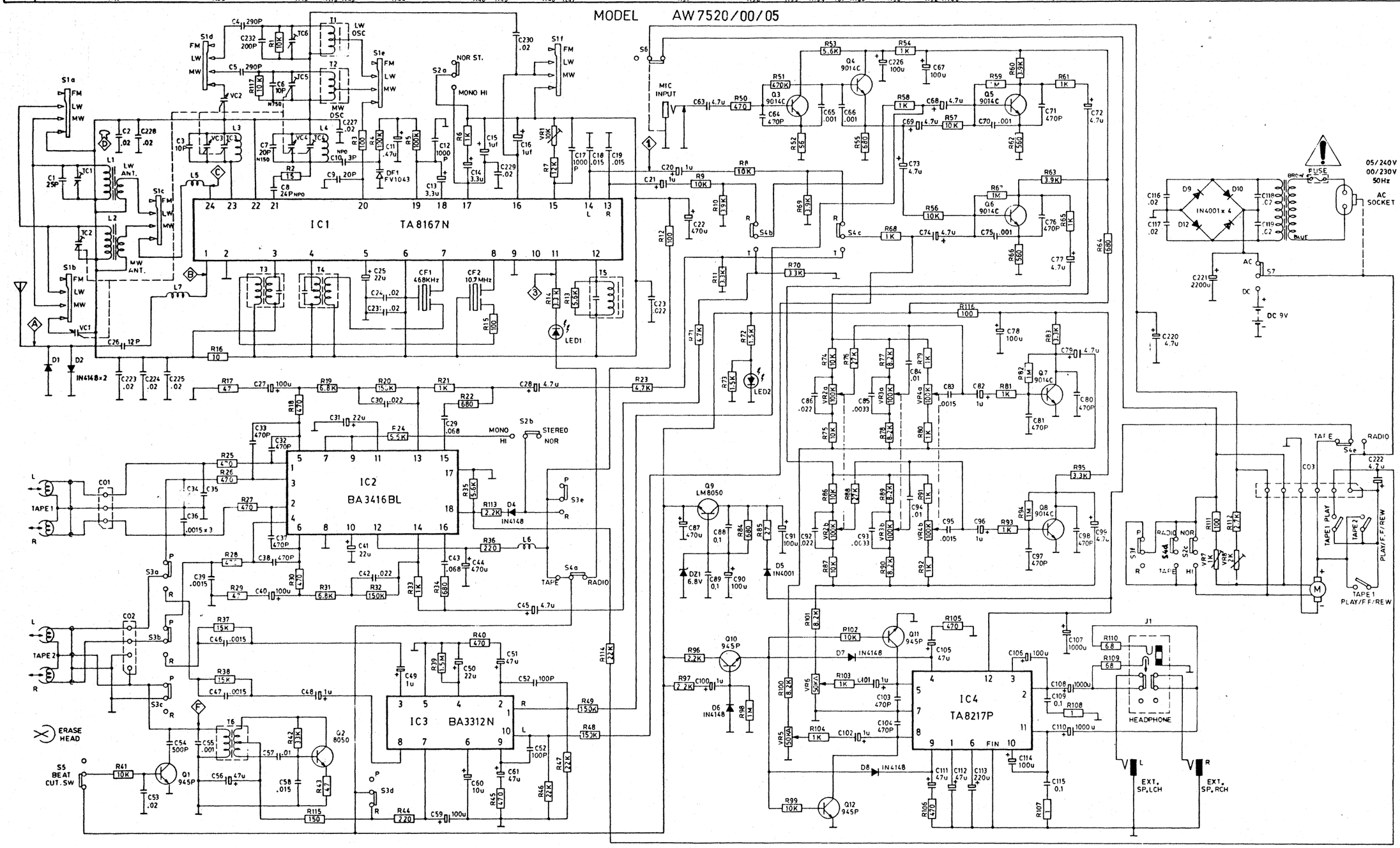
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

BLOCK DIAGRAM

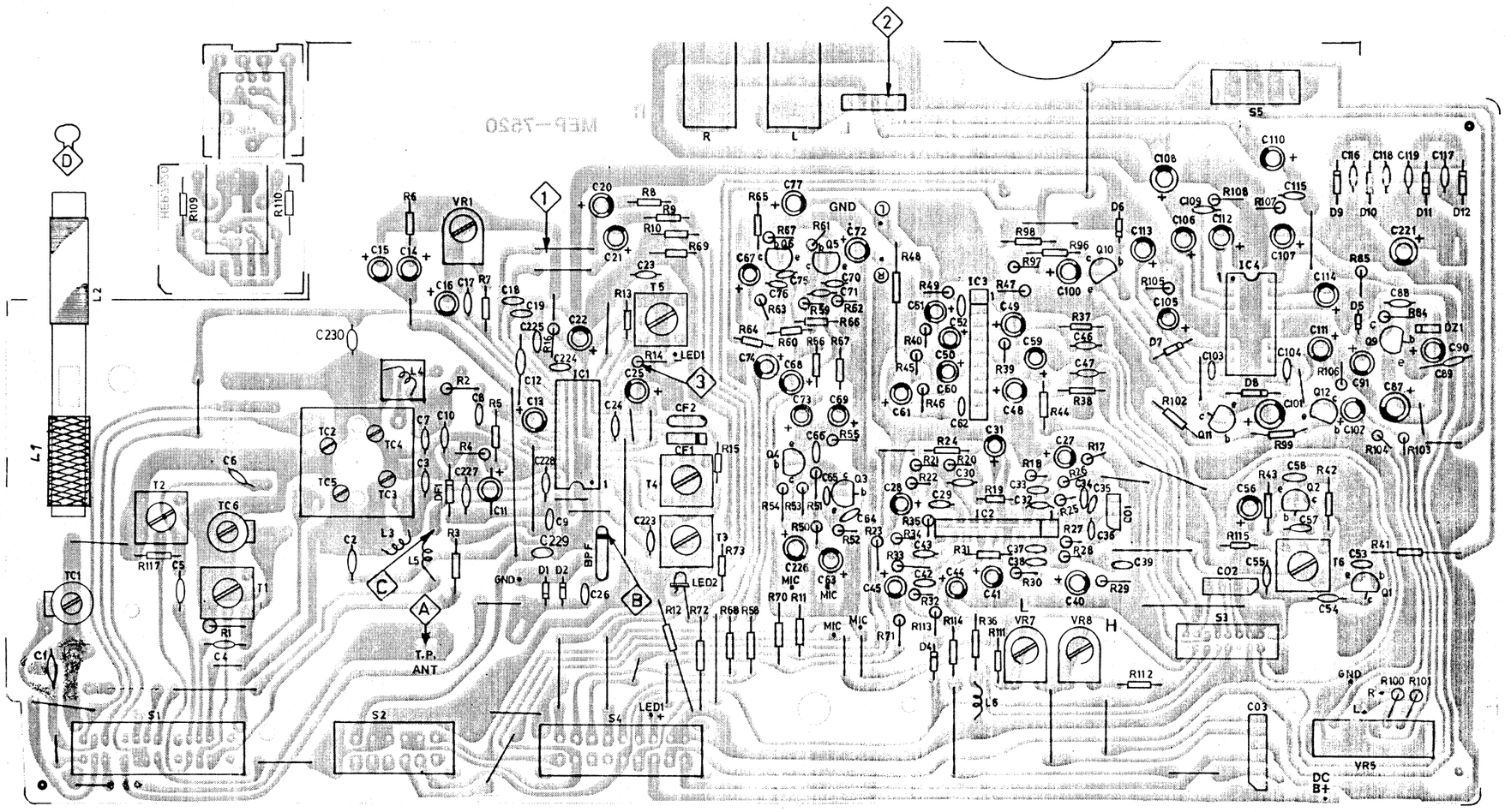


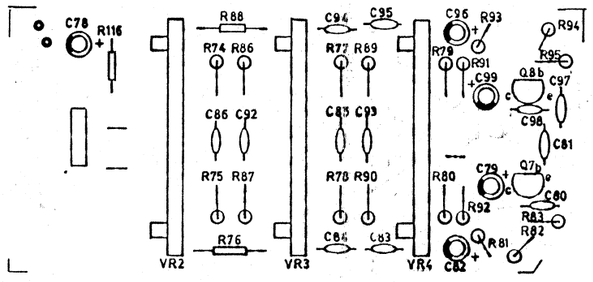
SCHEMATIC DIAGRAM

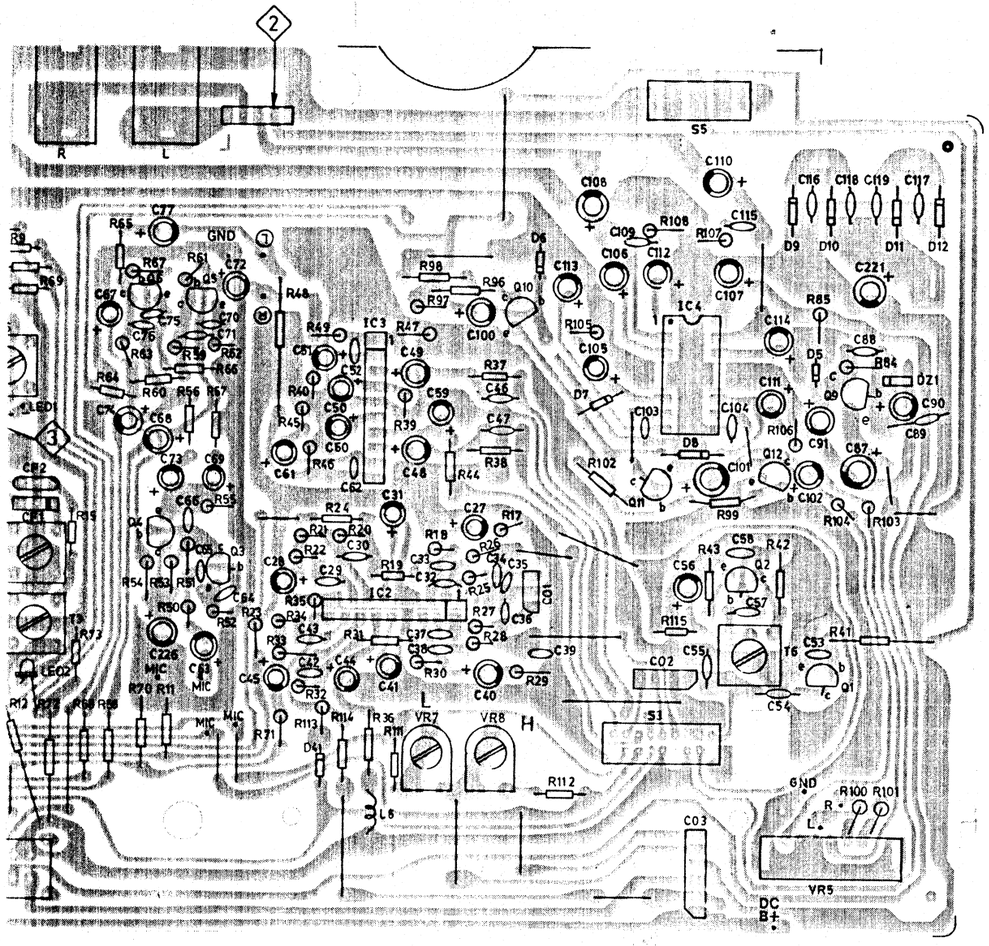
MISC	TC1 L1 VC2 TC6 T1 DF1 IC1 Q3 Q4 Q5 D9 D10 Tr1 TC2 L2 L5 VC3 TC3 L3 TC5 T2 CF1 CF2 LED1 T5 Q9 LED2 Q11 Q6 D12 D11 VC1 BPF VC4 TC4 L4 IC2 Q10 D5 D7 IC4 Q7 D1 D2 Q1 T6 T3 T4 Q2 IC3 D4 L6 DZ1 D6 Q12 D8 Q8 J1
C	C1 C2 C228 C3 C4 C232 C6 C227 C10 C11 C12 C15 C230 C17 C18 C19 C63 C64 C65 C66 C226 C67 C70 C71 C77 C72 C116 C118 C26 C5 C7 C8 C9 C25 C231 C24 C13 C14 C229 C16 C28 C21 C20 C73 C69 C68 C75 C76 C79 C117 C119 C223 C224 C225 C27 C31 C30 C29 C22 C88 C91 C86 C85 C84 C74 C83 C78 C81 C80 C220 C221 C34 C35 C46 C33 C32 C41 C42 C43 C44 C45 C73 C90 C93 C94 C95 C82 C97 C107 C98 C99 C222 C35 C39 C47 C40 C37 C38 C49 C50 C51 C52 C87 C89 C101 C103 C105 C96 C105 C109 C108 C53 C54 C55 C56 C57 C58 C48 C59 C60 C61 C62 C100 C102 C104 C111 C112 C113 C114 C115 C110
R	R16 R1 R3 R4 R5 R6 VR1 R50 R51 R53 R55 R58 R54 R58 R56 R57 R59 R60 R61 R17 R117 R2 R19 R15 R7 R9 R8 R52 R74 R76 R77 R79 R66 R67 R62 R63 R64 R25 R18 R20 R21 R22 R14 R13 R12 R10 R69 VR2a VR3a VR4a R115 R66 R65 R26 R27 R24 R35 R114 R23 R11 R70 R75 R78 R80 R81 R82 R83 R28 R30 R33 R34 R113 R49 R71 R73 R72 R100 R101 R86 R88 R89 R91 R95 R111 R112 R37 R29 R31 R32 R39 R36 R48 R96 R84 R85 VR5 VR6 VR2b R102 VR3b VR4b R105 R93 R94 R108 R110 VR7 VR8 R41 R38 R42 R115 R43 R44 R40 R45 R46 R47 R97 R98 R99 R104 R87 R103 R90 R92 R106 R107 R109

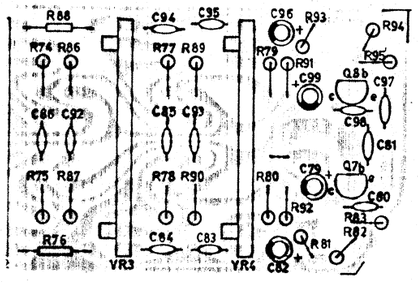


COMPONENTS LAYOUT DIAGRAM - TOP VIEW









RADIO ALIGNMENT

SK....	FREQUENCY	I/P	VARICON	ADJUST	O/P	SCOPE/METER
AM IF						
MW	468 kHz	C	Min.	T4	1	↕ Max.
AM RF						
MW *	515 kHz	D	Max.	T2	2	↕ Max.
	1630 kHz		Min.	TC5		
	600 kHz		600 kHz	L2		↕ Max.
	1400 kHz		1400 kHz	TC2		
LW	145 kHz	D	Max.	T2	2	↕ Max.
	295 kHz		Min.	TC6		
	150 kHz		150 kHz	L1		↕ Max.
	270 kHz		270 kHz	TC1		
FM IF						
FM #	10.7 MHz	B	Min.	T3 T5	1	↕ Symmetrical
FM RF						
FM#	87.35 MHz	A	Max.	L4	2	↕ Max
	108.25 MHz		Min.	TC4		
	90 MHz		90 MHz	L3		↕ Max.
	106 MHz		106 MHz	TC3		
STEREO DECODER						
FM#	98 MHz		98 MHz	VR1	3	76 ± 0.2 kHz

* Mod. 1 kHz 30%
\# via 10 nF + 15 E

"Bei notwendigem Abgleich ist das Gerät auf die gesetzlich vorgeschriebenen Eckfrequenzen abzugleichen".

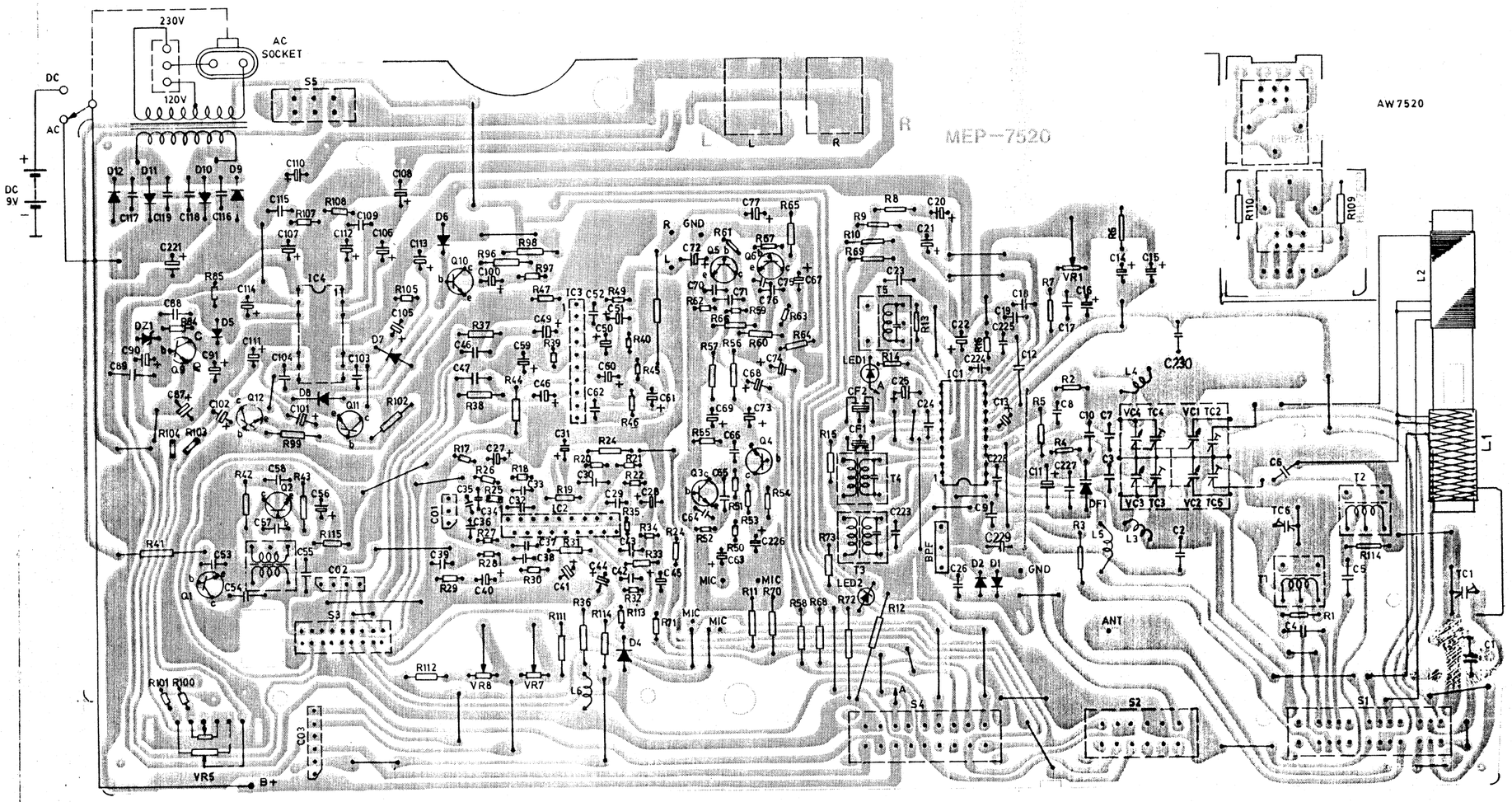
↕ Repeat

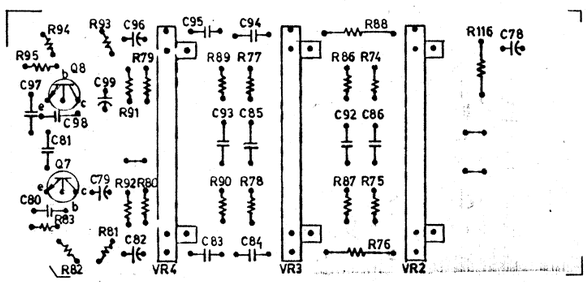
CASSETTE ADJUSTMENT

Adjustment	Cassette	Recorder position			Measure on	Read on	Adjust with	Adjust to
		SK...	Deck 1	Deck 2				
Head Azimuth	8kHz SBC420*	Tape	Play	– –	2	mV meter	Left screw of P. head on Deck 1	max. output L = R
		Tape	– –	Play	2	mV meter	Left screw of P. head on Deck 2	
Motor speed	3150Hz SBC420*	Tape (nor. speed)	– –	Play	2	Wow and flutter meter	VR7	**a
		Tape (hi. speed)	Record	Play	2	Frequency counter	VR8	5.7 – 6.3 kHz

* SBC420 : 4822 397 30071
**a The maximum permissible speed deviation is ±3%.
Morever, the wow and flutter value can be read.

COMPONENTS LAYOUT DIAGRAM - BOTTOM VIEW





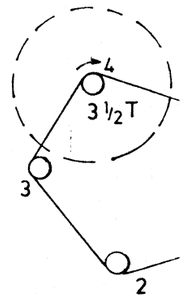
VOLTAGE CHART

PIN	IC1 TA8167N		
	(FM)	(MW)	(SW)
1	0.80	0	0.01
2	0	0	0.01
3	4.70	5.19	5.19
4	4.60	5.22	5.22
5	1.00	0.83	0.02
6	4.50	5.21	5.21
7	4.50	5.1	5.1
8	4.60	5.21	5.21
9	0.01	0	0
10	0.01	0	2.05
11	0.02	5.63	5.17
12	4.68	5.20	5.20
13	1.05	1.06	1.06
14	1.07	1.08	1.08
15	4.15	4.56	4.56
16	3.56	5.21	5.21
17	3.72	4.65	4.72
18	0.66	0.66	0.66
19	2.00	1.16	1.69
20	3.75	5.16	5.16
21	4.65	5.17	5.17
22	4.45	5.19	5.19
23	4.35	5.19	5.19
24	1.70	5.09	5.19

PIN	IC2 BA3416BL	IC3 BA3312N	IC4 TA8217P
1	0.02	0.02	8.18
2	0.02	0.60	4.53
3	0.015	2.32	8.82
4	0.015	0.50	0.63
5	0.62	0.02	5.00
6	0.62	5.36	8.93
7	0.09	5.41	0
8	0.015	2.30	5.00
9	0.09	0.60	0.63
10	5.51	0.02	8.82
11	1.93		4.52
12	5.89		9.02
13	3.63		
14	3.64		
15	0.015		
16	0.015		
17	0.015		
18	1.05		

	B	C	E
Q1 (beat 1)	0.71	0.02	0.02
Q2 (beat 2)	0.02	11.38	0.02
Q3 (rec)	0.86	4.23	0.02
Q3 (play)	0.42	0.44	0.01
Q3	0.65	1.28	0.03
Q4	1.28	3.36	0.66
Q5	0.91	2.73	0.30
Q6	0.95	2.47	0.34
Q7	0.64	3.33	0.02
Q8	0.64	3.69	0.02
Q9	6.92	6.24	7.63
Q10	0.02	6.24	0.04
Q11	0.04	0.03	0.01
Q12	0.04	0.03	0.01

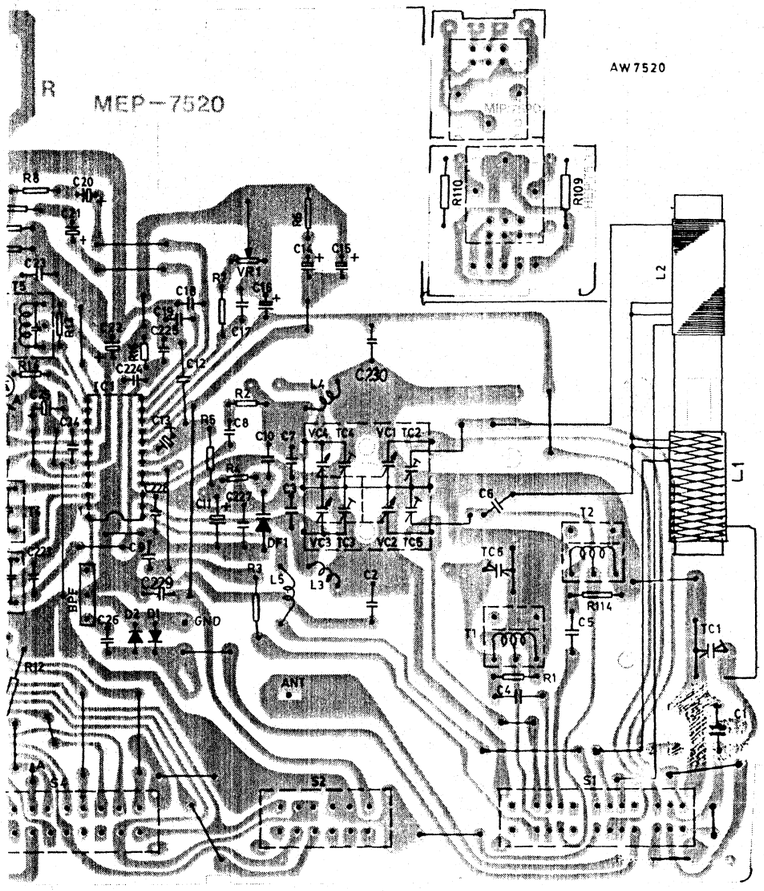
DIAL STRINGIN



DISASSEMB

1. To open ca

2. To take out



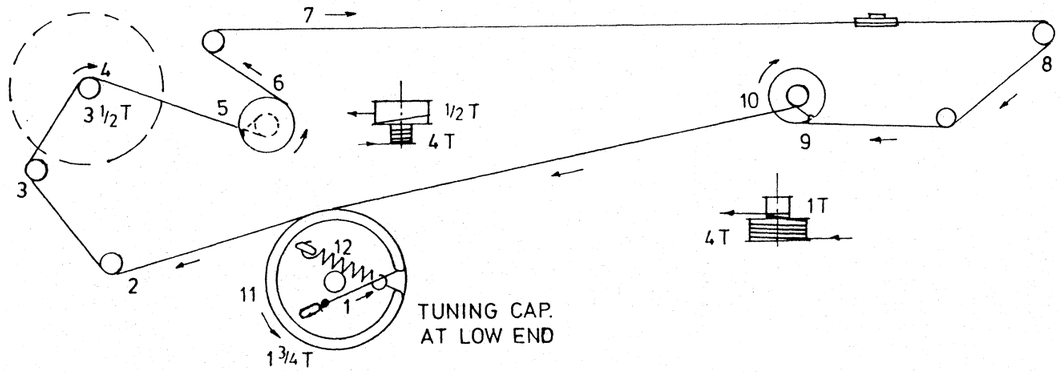
	B	C	E
Q1 (beat 1)	0.71	0.02	0.02
Q2 (beat 2)	0.02	11.38	0.02
Q3 (rec)	0.86	4.23	0.02
Q3 (play)	0.42	0.44	0.01
Q3	0.65	1.28	0.03
Q4	1.28	3.36	0.66
Q5	0.91	2.73	0.30
Q6	0.95	2.47	0.34
Q7	0.64	3.33	0.02
Q8	0.64	3.69	0.02
Q9	6.92	6.24	7.63
Q10	0.02	6.24	0.04
Q11	0.04	0.03	0.01
Q12	0.04	0.03	0.01

VOLTAGE CHART

PIN	IC1 TA8167N		
	(FM)	(MW)	(SW)
1	0.80	0	0.01
2	0	0	0.01
3	4.70	5.19	5.19
4	4.60	5.22	5.22
5	1.00	0.83	0.02
6	4.50	5.21	5.21
7	4.50	5.1	5.1
8	4.60	5.21	5.21
9	0.01	0	0
10	0.01	0	2.05
11	0.02	5.63	5.17
12	4.68	5.20	5.20
13	1.05	1.06	1.06
14	1.07	1.08	1.08
15	4.15	4.56	4.56
16	3.56	5.21	5.21
17	3.72	4.65	4.72
18	0.66	0.66	0.66
19	2.00	1.16	1.69
20	3.75	5.16	5.16
21	4.65	5.17	5.17
22	4.45	5.19	5.19
23	4.35	5.19	5.19
24	1.70	5.09	5.19

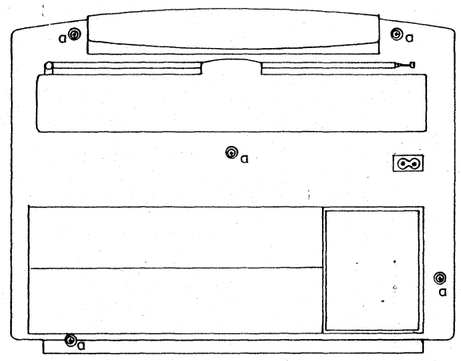
PIN	IC2 BA3416BL	IC3 BA3312N	IC4 TA8217P
1	0.02	0.02	8.18
2	0.02	0.60	4.53
3	0.015	2.32	8.82
4	0.015	0.50	0.63
5	0.62	0.02	5.00
6	0.62	5.36	8.93
7	0.09	5.41	0
8	0.015	2.30	5.00
9	0.09	0.60	0.63
10	5.51	0.02	8.82
11	1.93		4.52
12	5.89		9.02
13	3.63		
14	3.64		
15	0.015		
16	0.015		
17	0.015		
18	1.05		

DIAL STRINGING

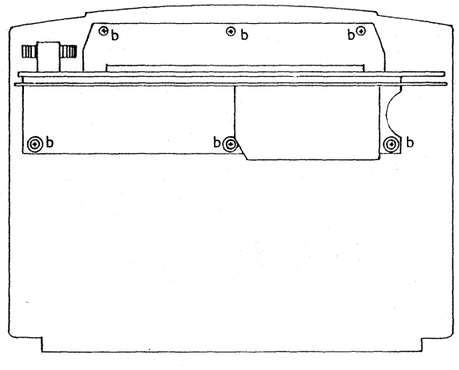


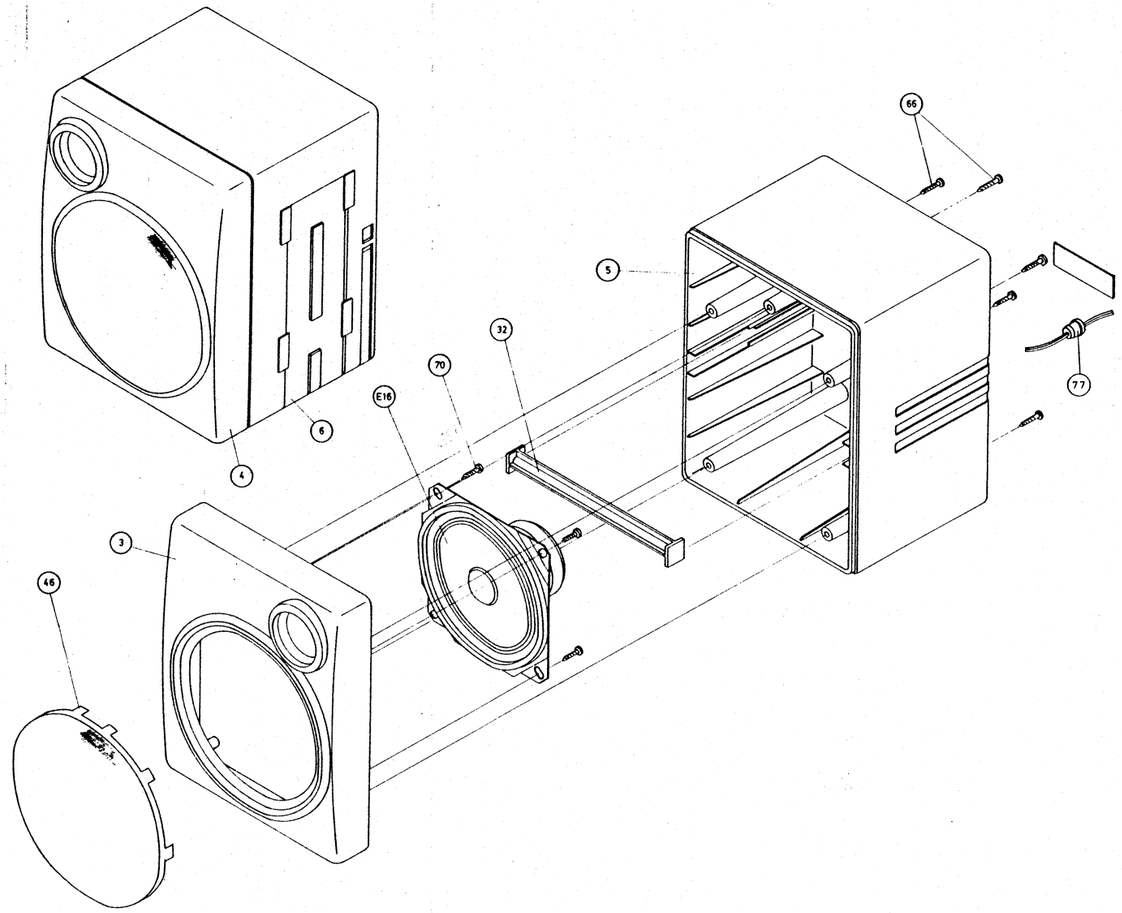
DISASSEMBLE INSTRUCTION

1. To open cabinet, remove 5 screws marked with 'a'.



2. To take out chassis bracket, remove 6 screws marked with 'b'.

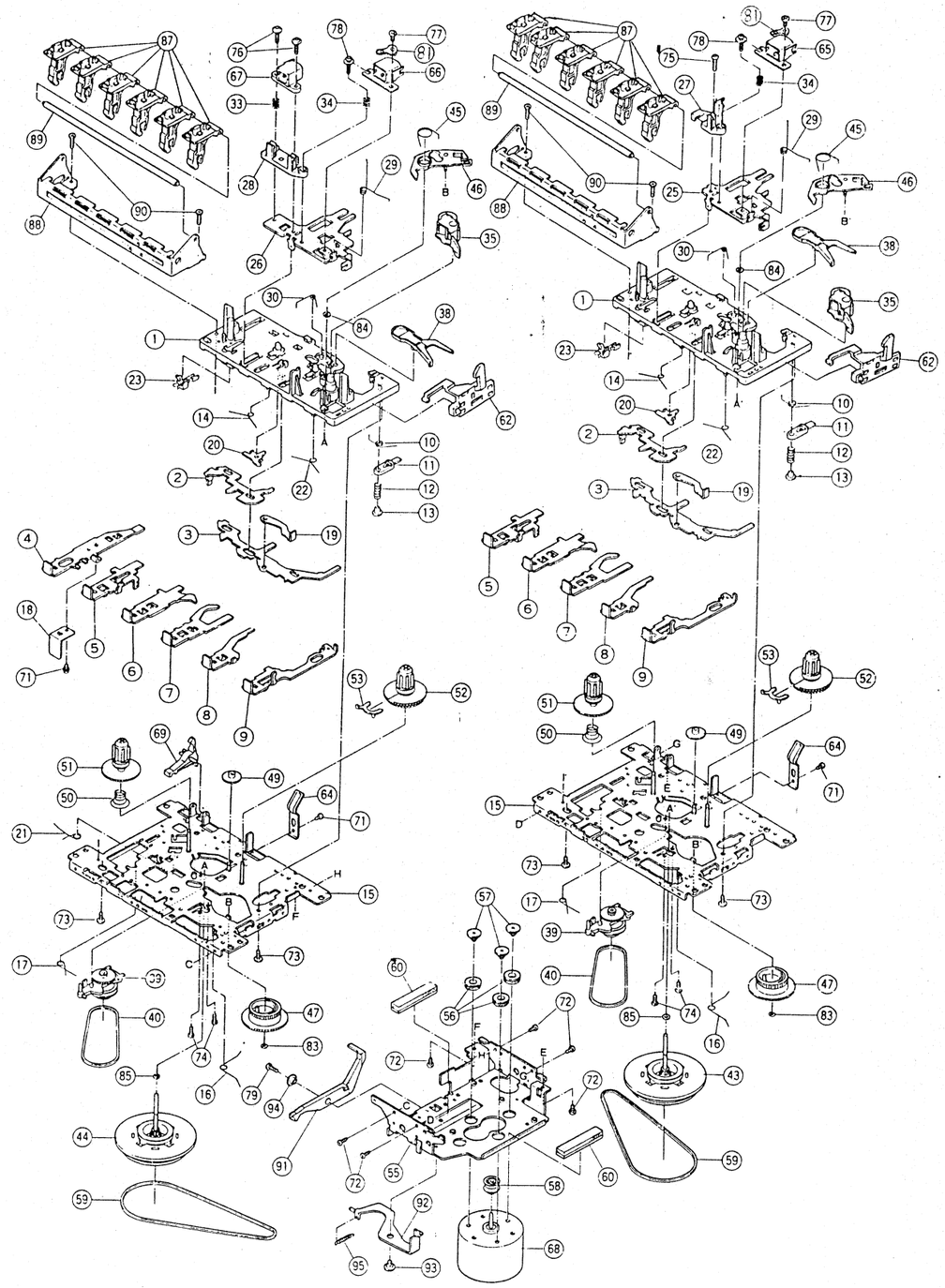




1	4822 423 51156	17	4822 410 62368	35	4822 410 62372
2	4822 421 60208	18	4822 410 62369	36	4822 410 62377
3	4822 445 30249	19	4822 410 62371	37	4822 450 61994
4	4822 445 30248	20	4822 450 81209	38	4822 450 61995
5	4822 445 40127	21	4822 423 41214	39	4822 528 81488
6	4822 445 40126	22	4822 522 33315	46	4822 458 30645
7	4822 333 40486	23	4822 256 92007	47	4822 492 42641
9	4822 443 63793	24	4822 528 81487	71	4822 303 30438
10	4822 443 63794	25	4822 528 40353	72	4822 321 61815
11	4822 498 10473	26	4822 413 51436	73	4822 492 71256
12	4922 498 91047	27	4822 413 51437	74	4822 492 71255
13	4822 410 62364	28	4822 466 82973	75	4822 462 41978
14	4822 410 62365	31	4822 454 12878	76	4822 492 71254
15	4822 410 62366	33	4822 411 61903	77	4822 404 10873
16	4822 410 62367	34	4822 411 61904		

Only those parts of which a service code number is stated are service parts.

EXPLODED VIEW - CASS. DECK (TN21ZSW)



CASS. DECK – TN–21ZSW–1245 4822 691 20811

23	4822 278 90724	59	4822 358 30919	67	4822 249 40277
35	4822 403 40513	62	4822 403 53815	68	4822 361 21592
40	4822 358 30921	65	4822 249 10475	87	4822 278 90723
58	4822 528 81415	66	4822 249 10475	97	4822 278 90723

ELECTRICAL PARTSLIST

– IC –

IC1	4822 209 31974	TA8167N
IC2	4822 209 71951	BA3416BL
IC3	4822 209 71949	BA3312N
IC4	4822 209 63783	TA8217P

– TRANSISTORS –

Q1	4822 130 63192	LM945P
Q2	4822 130 42399	LM8050I
Q3	4822 130 42401	LM9014C
Q4	4822 130 42401	LM9014C
Q5, Q6	4822 130 42401	LM9014C
Q7, Q8	4822 130 42401	LM9014C
Q9	4822 130 42399	LM8050I
Q10	4822 130 63192	LM945P
Q11, Q12	4822 130 63192	LM945P

– DIODES –

D1, D2	4822 130 30621	1N4148
D4	4822 130 30621	1N4148
D5	4822 130 31438	1N4001
D6 – D8	4822 130 30621	1N4148
D9 – D12	4822 130 31438	1N4001
DF1	4822 130 80959	FV–1043 (AFC)
DZ1	4822 130 80962	Zener UZ–6.8B
LED1	4822 130 83238	LED SLP–155B–81
LED2	4822 130 83238	LED SLP–155B–81

– RESISTORS –

VR1	4822 100 11952	Potm–trim 10kB
VR2–VR4	4822 105 11117	Potm–slide B100kX2
VR5	4822 101 21213	Potm–rot. 50kAx2
VR7	4822 100 11951	Potm–trim 1kB
VR8	4822 100 11953	Potm–trim 2kB

– COILS –

L1	4822 157 70463	Coil–LW ant
L2	4822 157 70464	Coil–MW ant
L3	4822 157 70281	Coil–FM RF
L4	4822 156 11088	Coil–FM osc
L5	4822 157 70278	Coil–choke 2.2μH
L6	4822 157 70277	Coil–ferrite choke
T1	4822 157 70287	Coil–LW osc
T2	4822 157 70287	Coil–MW osc
T3	4822 157 70288	IFT–FM orange
T4	4822 157 70284	IFT–AM yellow
T5	4822 157 70286	IFT–FM blue
T6	4822 157 70285	Coil–bias osc

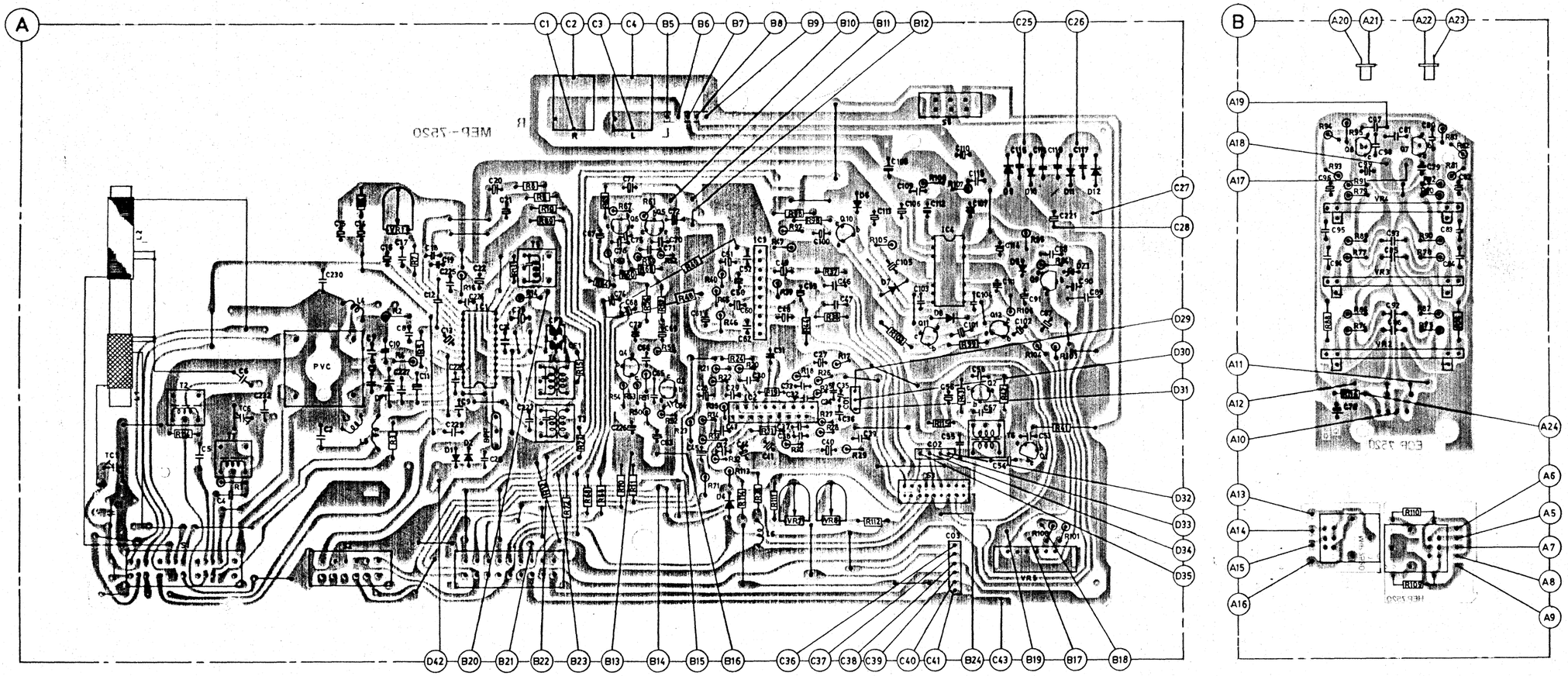
– CAPACITORS –

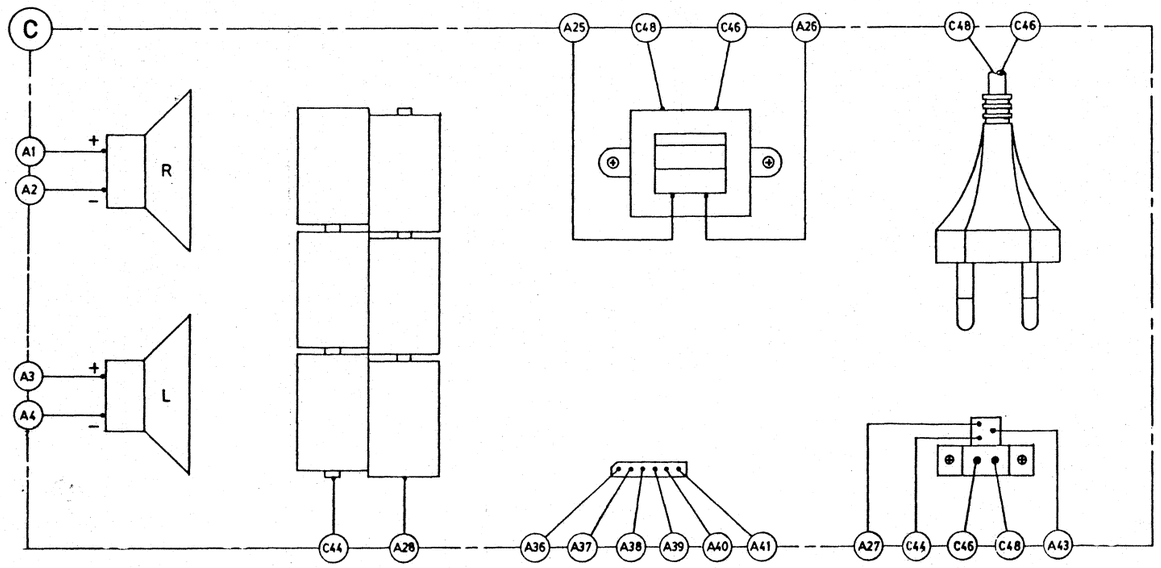
PVC	4822 125 50632	AM/FM PVC
TC1	4822 125 50317	Cap–trim 27pF
TC2	4822 125 50317	Cap–trim 27pF

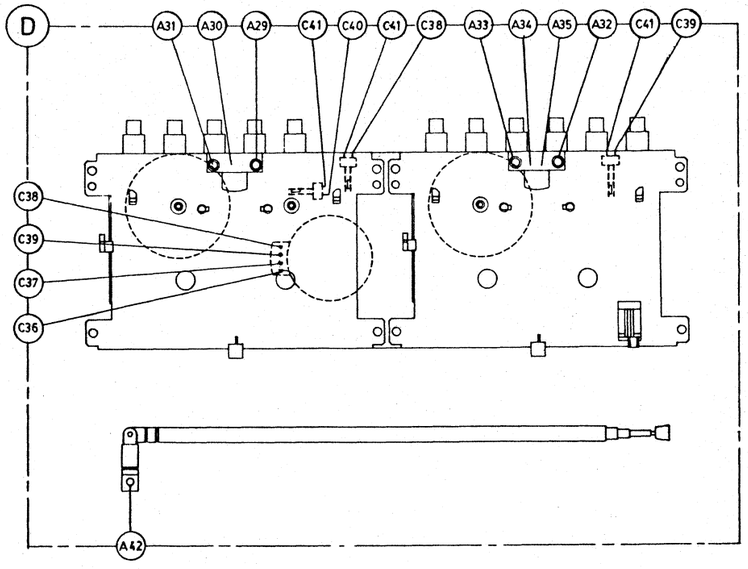
– MISCELLANIES –

BPF	4822 157 70276	Band pass filter
CF1	4822 242 72247	Cer. filter 468 kHz
CF2	5322 242 70951	Cer. filter 10.7MHz
	4822 158 60639	Ferrite bar D10x100
S1	4822 277 21659	Sw–slide function
S2	4822 277 21658	Sw–slide Mo/St
S3	4822 276 13346	Sw–push record
S4	4822 277 21661	Sw–slide band
S5	4822 277 21657	Sw–slide beat cut
⚠	4822 265 20614	Socket – mains
J1	4822 267 31587	Jack–headphone
J2	4822 267 31587	Jack–mic
J3, J4	4822 267 31586	Socket–speaker
	4822 240 50332	Loudspeaker 4 ohm
⚠	4822 146 31217	Transf. mains

WIRING DIAGRAM







EXPLODED VIEW DIAGRAM - CABINET